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NOTES ON GEOGRAPHIC DISTRIBUTION

First documented record of the Roseate Tern *Sterna dougallii* Montagu, 1813 (Aves: Sternidae) in southeast Brazil

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ABSTRACT: We report the first record of *Sterna dougallii* Montagu, 1813 on the southeastern Brazilian coast. During monthly bird surveys in the northern Rio de Janeiro State, on January 2012 we recovered a tern banded in Massachusetts, USA. The present record stretches the *S. dougallii* southernmost geographic distribution in Brazil (Bahia state) by about 600 km. It is difficult to evaluate this species' regional status due to the absence of continuous sampling efforts.

The Roseate Tern, *Sterna dougallii* Montagu, 1813, is a migratory seabird widely distributed worldwide (Gochfeld 1983; Burger and Gochfeld 1996; Sick 1997). The species breeds colonially, it is more prominently concentrated in North America and Europe (Gochfeld 1983; Bent 1986) and migrates towards coastal environments of Central and South America, Africa, South Asia and North Australia during the austral winter (Nisbet 1984; Burger and Gochfeld 1996). Besides that, is one of the least known and observed terns in Brazilian coastal environments. Published information on its geographic distribution in Brazil is scarce, and most studies report sporadic records on the northern and northeastern coast of the country (Hamilton 1981; Lara-Resende 1982; Sick 1997). Several banded individuals of *S. dougallii* from North America and Europe have been recovered in the species' southernmost occurrence in Brazil, in Bahia state, approximately 15° S (Sick 1997; Lima *et al.* 2004; Mestre *et al*. 2010). Some reports addressed diverse spatial and temporal threats to the species worldwide, such as hunting for food or sport, predation from both natural and introduced predators, habitat loss, anthropogenic activity, and storms (Cramp *et al.* 1974; Gochfeld 1983; Cooper *et al.* 1984; van Halewyn and Norton 1984; Avery *et al.* 1995). Despite these threats, the conservation status of the Roseate Tern is evaluated as least concern due to the lack of data about global population trends (IUCN 2012).

This paper presents the first documented record of *S. dougallii* for the southeastern Brazilian coast, during our monthly bird surveys conducted in northern Rio de Janeiro state.

The study site was the coastal area of the northern Rio de Janeiro state and has the marked presence of reflective beaches and coastal lagoons (Figure 1). The Paraíba do Sul River estuary and Lagoa Feia (the country's second freshwater lagoon in size) stand out as the most representative wetlands in extension which flow into the sea. Two climatic seasons prevail in the study area. The rainy season is from May to August, whereas the dry season lasts from September to April. We carried out monthly bird surveys in search for beached birds, mainly in the municipalities of São Francisco de Itabapoana (21°26'37" S, 41°03'38" W), São João da Barra (21°38'50" S, 41°03'36" W), Quissamã (22°10'5" S, 41°26'25" W) and Carapebus (22°12'29" S, 41°38'21" W) (Figure 1).

On 08 January 2012, a weakened Roseate Tern was recovered in Barrinha beach (21°23'30" S, 40°59'18" W), São Francisco de Itabapoana municipality (Figure 1), northern Rio de Janeiro state, southeast Brazil. The tern died just after being sent to a rehabilitation center. Inappropriate necropsy procedures rendered the skin useless for scientific collection. Therefore, as recommended

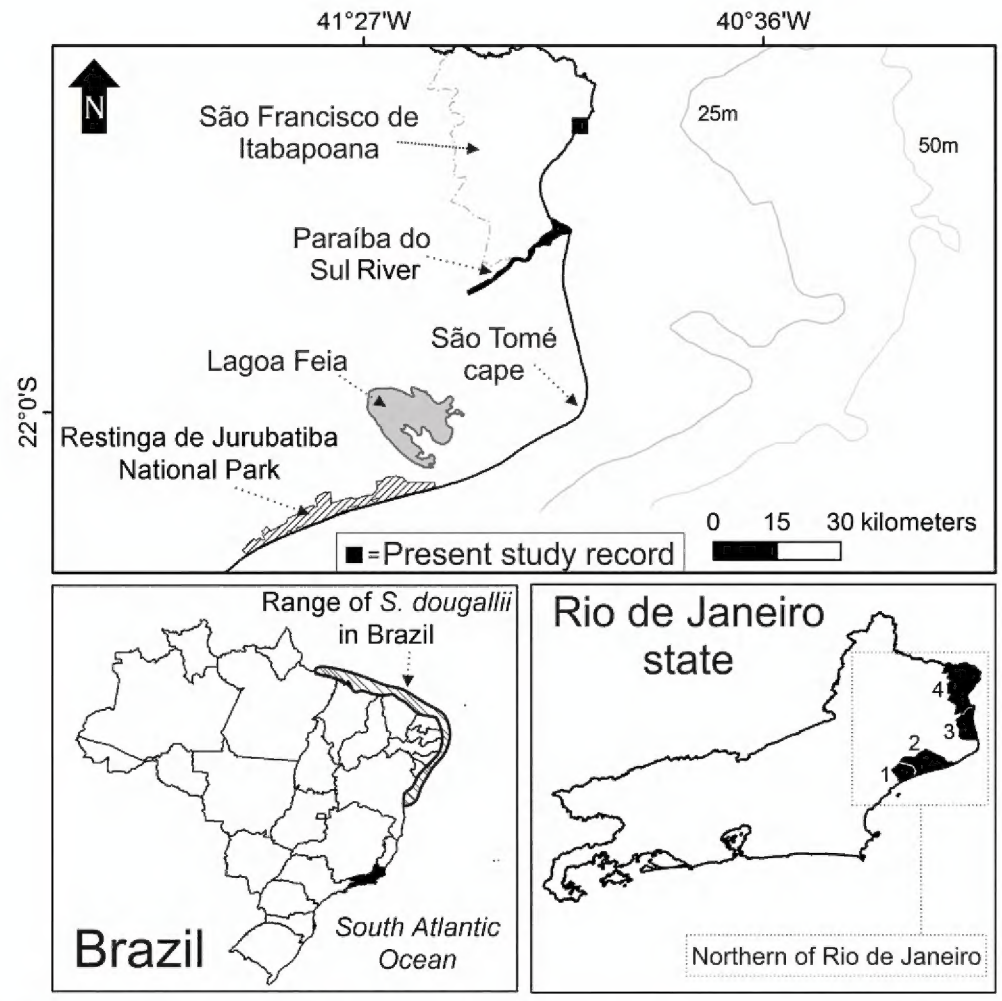

FIGURE 1. Location of the record of *Sterna dougallii* in northern Rio de Janeiro coast, southeastern Brazil. Numbers in the bottom-right inset refer to the municipalities sampled during our monthly surveys: (1) Carapebus; (2) Quissamã; (3) São João da Barra; and (4) São Francisco de Itabapoana.

by Carlos *et al*. (2002), the documentation for the present record, i.e. photos as well as the bird's skeleton and band, were deposited in the scientific collection of Instituto Megafauna Marinha (IMMAR) under accession number OCE 66. Total body length (339 mm), bill (40 mm), wing (227 mm), tail (125 mm) tarsus (20 mm) and middle finger (25 mm) were measured using calipers and rules. The individual had a band on its leg (number 1182-75938), placed in Dukes County, Massachusetts, USA, on 23 June 2005 during the North American Bird Banding Program (http://www.pwrc.usgs.gov/bbl). The banding center was contacted to inform band recovery, and confirmed that the tern hatched in 2003, which means that it was about nine years of age when it was recovered in Brazil. The present record represents the southernmost observation of *S. dougallii* on the Brazilian coast, increasing the species' former southernmost distribution (Bahia state) in the country (Sick 1997; Lima *et al.* 2004) by *ca.* 600 km.

It should be mentioned that the bird had an inflammatory injury in the right tarsus (Figure 2), possibly caused by the band, which was placed perhaps too tightly. This chronic adverse situation may cause swelling, loss of toe function, as well as impairing or interrupting of blood flow (Fair *et al.* 2010). The combination of plastic and metal bands placed in the same leg, as observed in the captured tern, may increase the likelihood of injury (Sedgwick and Klus 1997). As an additional effort to investigate the cause of death of this tern, oral and cloacal bacteriological tests to detect the presence of families Aeromonadaceae and Vibrionaceae were carried out in the National Reference Laboratory for Bacterial Enteroinfections (LRNEB; IOC/ Fiocruz), with negative results. These microorganisms may be responsible for the decline of seabird populations, though this possibility has not been extensively studied in Brazil. The few descriptive studies published addressed essentially public health and environment issues (e.g. Moura *et al.* 2012).

Figure 2. Leg injury of the *Sterna dougallii* specimen (OCE 66) found in the northern coast of Rio de Janeiro state, southeast Brazil.

It is quite possible that Roseate Terns have gone unrecorded in Rio de Janeiro State and southward localities in Brazil just because it is easily mistaken for Common Tern *Sterna hirundo* Linnaeus, 1758. The inspection of external rectrices, clearly white in *S. dougallii* (Figure 3) and edged blackish in *S. hirundo*, is the best way to distinguish the two species (Gochfeld 1983; Perlo 2009). Nevertheless, no substantial recovering efforts have been deployed in the northern Rio de Janeiro coast before the present paper. Besides, the most intense upwelling systems along the northern Rio de Janeiro coast (Valentin 2001), associated with sediment loads carried by the Paraíba do Sul River estuary (Krüger *et al.* 2003; Almeida *et al.* 2007) may significantly increase biological productivity and fish abundance. These suitable conditions provide an important food source for seabirds (Coelho-Souza *et al*. 2012), including the Roseate Tern, considering that this species' feeds mainly on fish and mollusks inhabiting surface waters (Lynds 1903; Bent 1986). In fact, northern Rio de Janeiro state seems to be an important staging area for Nearctic migrants in the country (Antas 1986; Tavares *et al.* 2012b). This set of circumstances suggests that *S. dougallii* may be a regular wintering migrant in northern Rio de Janeiro State.

The present record of *S. dougallii* in the southeastern Brazilian coast stretches its known distribution range in South America, and the importance of the recent beach monitoring efforts to detect species of unknown occurrence in southeast Brazil (e.g. Tavares *et al.* 2012a). Furthermore, we recommend the inclusion of this species in the primary bird list of Rio de Janeiro state (Gagliardi 2011).

Figure 3. Tail of the *Sterna dougallii* specimen (OCE 66) found in the northern coast of Rio de Janeiro state, southeast Brazil, showing the white external rectrices.

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